

### Patent Claims

1. Flake-form effect pigments, characterised in that the flakes are transparent or semitransparent and have a regular groove or grid structure.  
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2. Flake-form effect pigments according to Claim 1, characterised in that they consist of one or more layers of transparent or semitransparent materials.
- 10 3. Flake-form effect pigments according to Claim 1 or 2, characterised in that the groove or grid structure is located on the surface or in the body of the transparent or semitransparent flakes.
- 15 4. Flake-form effect pigments according to one of Claims 1 to 3, characterised in that the separations in the groove or grid structure are in the range from 250 to 2000 nm.
- 20 5. Flake-form effect pigments according to one of Claims 1 to 4, characterised in that the transparency of the flakes is  $> 20\%$ .
- 25 6. Flake-form effect pigments according to one of Claims 1 to 5, characterised in that the groove or grid structure consists of regularly arranged lines, hemispheres, spheres, pyramids, cubes or correspondingly shaped holes.
7. Flake-form effect pigments according to Claim 6, characterised in that the spheres are mono- or multicoated spheres.
- 30 8. Flake-form effect pigments according to one of Claims 1 to 7, characterised in that the transparent or semitransparent materials are mag-

nesium fluoride, metals, metal oxides, metal suboxides, metal nitrides, metal oxynitrides or phosphates.

- 5 9. Flake-form effect pigments according to one of Claims 1 to 8, characterised in that at least one of the transparent or semitransparent materials has a refractive index  $> 1.7$ .
- 10 10. Flake-form effect pigments according to Claim 9, characterised in that the material layer having a refractive index  $> 1.7$  consists of aluminium oxide, titanium oxide, iron oxide, zirconium oxide or of mixtures of these materials.
- 15 11. Process for the production of flake-form effect pigments according to Claim 1, characterised in that a body provided with a groove or grid structure is coated with a transparent or semitransparent material, and the flake-form effect pigment is obtained either by detachment from the structured body or by separation from a support together with the structured body.
- 20 12. Process according to Claim 11, characterised in that the body provided with a grid structure has regularly arranged grooves or spheres.
- 25 13. Process according to Claim 12, characterised in that the spheres are mono- or multicoated spheres.
14. Process according to one of Claims 11 to 13, characterised in that the flake-form effect pigments are coated with further layers of a transparent or semitransparent material.
- 30 15. Process according to Claim 14, characterised in that the semitransparent material is a metal.

16. Process according to one of Claims 11 to 15, characterised in that the coating is carried out wet-chemically, by the sol-gel process or via PVD or CVD processes.

5 17. Use of flake-form effect pigments according to Claim 1 in cosmetics, paints, surface coatings, plastics, films, in security printing, as security feature in documents and identity cards, as tracers, for laser marking, in heat protection, for colouring seed, for colouring foods or in medicament coatings.

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18. Formulations comprising flake-form effect pigments according to Claim 1.

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